## AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method of characterising a three phase transformer having three input terminals and three output terminals using a single phase power supply, the method comprising the steps of:

sequentially connecting the single phase power supply between all three available pairs of input terminals selected from the three input terminals of the transformer so as to energise each available pair of input terminals in turn;

during energisation of each pair of terminals measuring the voltage between all three available pairs of output terminals selected from the three output terminals of the transformer; and

processing the measured voltages to determine therefrom which one of a plurality of winding configurations the transformer has in order to characterise the transformer even when its winding configuration is unknown.

2. (Currently Amended) A method as claimed in claim 1 wherein the measured voltages are processed to automatically characterise the transformer according to its winding configuration.

3. (Currently Amended) A method as claimed in claim [[2]]1, wherein the processing step further comprises classifying the transformer ~~is classified~~ as D-D equivalent, D-Y equivalent, Y-D equivalent or Y-Y equivalent according to its winding configuration determined from the measured voltages.

4. (Currently Amended) A method of characterising a three phase transformer having three input terminals and three output terminals using a single phase power supply, the method comprising the steps of:

sequentially connecting the single phase power supply between all three available pairs of input terminals selected from the three input terminals of the transformer so as to energise each available pair of input terminals in turn;

during energisation of each pair of terminals measuring the voltage

between all three available pairs of output terminals selected from the three output terminals of the transformer; and

processing the measured voltages to characterise the transformer; ~~A method as claimed in claim 1~~

wherein the three voltages measured during energisation of each pair of input terminals are processed to identify the highest, lowest and intermediate value and the difference between the intermediate value less the lowest value computed and then divided by the highest value to produce three figures of merit, one associated with energisation of each pair of input terminals.

5. (Original) A method as claimed in claim 4 wherein each figure of merit is classified into one of four classes according to its value.

6. (Original) A method as claimed in claim 5 wherein each figure of merit is classified in a first class if it is greater than 0.82, a second class if it is less than or equal to 0.82 but greater than 0.45, a third class if it is less than or equal to 0.45 but greater than
0.16 and a fourth class if it is less than or equal to 0.16.

7. (Previously Presented) A method as claimed in claim 5 wherein a value is allocated to each figure of merit according to its classification, the allocated values are then added, and the transformer classified as D-D equivalent, D-Y equivalent, Y-D equivalent or Y-Y equivalent according to the total.

8. (Original) A method as claimed in claim 7 wherein the first, second, third and fourth classes are allocated the decimal numbers 64, 16, 4 and 1 respectively, (or equivalent numbers in a different base) and the transformer classified as follows according to the total of the allocated values:

| Winding classification | Sum of values |
|---|---|
| D-D | 33 |
| D-Y | 72 |
| Y-D | 96 |

Y-Y 9

9. (Previously Presented) A method as claimed in claim 1 wherein the transformer is characterised according to the presence of neutrals on its primary and/or secondary side.

10. (Currently Amended) A method of characterising a three phase transformer having three input terminals and three output terminals using a single phase power supply, the method comprising the steps of:

sequentially connecting the single phase power supply between all three available pairs of input terminals selected from the three input terminals of the transformer so as to energise each available pair of input terminals in turn;

during energisation of each pair of terminals measuring the voltage between all three available pairs of output terminals selected from the three output terminals of the transformer; and

processing the measured voltages to characterise the transformer;

wherein the transformer is characterised according to the presence of neutrals on its primary and/or secondary side; and ~~A method as claimed in claim 9~~

wherein the transformer has three input terminals H1, H2 and H3 and an input neutral terminal HO and three output terminals X1, X2 and X3 and an output neutral XO and when the single phase power supply is connected between input terminals H1 and H3 the highest voltage measured between output terminals X1 and X3, X2 and X1 and X3 and X2is saved ($X_{pp}$) and the highest voltage measured between X1 and XO, X2 and XO and X3 and XO is saved ($X_{pp}$) and further comprising the step of connecting the single phase power supply between HI and HO, measuring the voltages between X1 and X3, X2 and XI, and X3 and X2, saving the highest value ($X_{pn}$) and determining the ratios of the first saved voltage with each of the second and third saved voltages respectively ($X_{pn}/X_{pp}$ and $X_{np}/ X_{pp}$)thereby to determine the presence of neutrals on the primary and/or secondary side of the transformer.

11. (Previously Presented) A method as claimed in claim 10 wherein the presence or absence of a neutrals is combined with the classification of winding configuration in order to further classify the winding configuration of the transformer as one of the

following:

a) D-D or D-Z or Z-D or Z-Z

b) D-$Z_n$

c) $Z_n$ -D or $Z_n$-Z

d) $Z_n$ - $Z_n$

e) D-Y or Z-Y

f) D-$Y_n$ or Z-$Y_n$

g) $Z_n$ -Y

h) $Z_n$ - $Y_n$

i) Y-D or Y-Z

j) Y- $Z_n$

k) $Y_n$-D or $Y_n$-Z

l) $Y_n$-$Z_n$

m) Y-Y

n) Y-$Y_n$

o) $Y_n$-Y

p) $Y_n$ - $Y_n$

12. (Currently Amended) A method of characterising a three phase transformer having three input terminals and three output terminals using a single phase power supply, the method comprising the steps of:

sequentially connecting the single phase power supply between all three available pairs of input terminals selected from the three input terminals of the transformer so as to energise each available pair of input terminals in turn;

during energisation of each pair of terminals measuring the voltage between all three available pairs of output terminals selected from the three output terminals of the transformer; and

processing the measured voltages to characterise the transformer, the measured voltages being processed to characterise the transformer according to its winding configuration, and the transformer is classified as D-D equivalent, D-Y equivalent, Y-D equivalent or Y-Y equivalent; ~~A method as claimed in claim 3,~~

wherein the phase displacement of the transformer is calculated by the following steps:

determining if the primary and secondary winding configurations are similar and if not allocating a value of 1, otherwise allocating a value of 0;

determining a configuration result factor and adding a value according to the configuration result factor to the value allocated in the previous step;

determining if the secondary winding of the transformer windings is reversed and if not adding 6 to the value calculated in the previous step, otherwise leaving the value unaltered; and if the value is greater than 12 substracting 12, otherwise leaving the value unaltered, thereby to determine the phase displacement of the transformer.

13. (Original) A method as claimed in claim 12 wherein the configuration result factor is determined as follows:

during energisation of each pair of input terminals shorting the remaining terminal to the low end of the energising power supply noting the pair of output terminals
across which the lowest output is measured and allocating a value depending on at which pair of output terminals the lowest output is measured, said value also depending upon whether or not the primary and secondary winding configurations are similar or not and naming the three values allocated to obtain the configuration result factor.

14. (Previously Presented) A method according to claim 12 wherein to determine if the secondary windings of the transformer are reversed the transformer is energised phase to phase on the primary and a corresponding phase to phase measurement made on the secondary and measuring the phase shift and the primary with respect to the secondary.

15. (Cancelled)

16. (Currently Amended) Apparatus for characterising a three phase transformer ~~using a method as claimed in claim 1~~ comprising:

a single phase power supply; means for selectively applying power from said power supply to pairs of input terminals of a three phase transformer; means for measuring the voltage between pairs of output terminals of a three phase transformer

and a control means comprising a processing means, said control means being operative to control said power supply, means for measuring voltages and processing means thereby to characterise a transformer.

17. (Original) Apparatus as claimed in claim 16 further comprising a phase meter under control of the control means.

18. (Previously Presented) Apparatus as claimed in claim 16 wherein the control means comprises a programmed computer.